VOLUME 4, ISSUE 3 THIRD QUARTER 2010

S O S SAFETY ON SHIPS

Newsletter of the Safety, Occupational Health and Environmental Programs for ships and ashore

MILITARY SEALIFT COMMAND

Aerial Work Platform Safety

By: Roderick Nerney and Shawn Smith

When workers are faced with working at heights or working over-the-side tasks, they have at their disposable a very versatile and powerful tool in the Mobile Elevating Work Platforms (MEWPs). MEWPs go by many names. In the maritime industry they are commonly referred to as man lifts. Other common names are boom lifts, scissor lifts, articulated boom lifts, cherry pickers, buckets, trucks JLGs, Genies, or aerial work platforms (AWPs).

Aerial Work Platforms (AWP) can make tasks a lot easier. Above a sailor is utilizing an AWP to paint the hull section by the anchor. This task would involve a great deal of rigging if performed from a bosun chair.

AWPs pose a risk if not used properly. Above is an AWP that tipped over while working on an aircraft carrier. The boom limit switch did not function properly.

Although there are several names for the equipment and subtle differences, almost all equipment falls under the ANSI/SIA 92.x standards. No matter the name, this piece of equipment provides users with tremendous power. Painting the side of the ship may require a contractor with a large crew to construct scaffolding or may be done by the slow and equally as labor intensive process of rigging and using bosun chairs. This same task can be easily accomplished in a couple of hours with a three person crew (two operators and safety observer) using an Aerial Work Platform, but with this power comes great responsibility.

Every man lift is required to have a copy of ANSI Standard and Responsibilities in a weather proof container along with the operating manual. This document covers the responsibilities of the operators, supervisors, owners, lessors, lessees, and manufacturers.

There are many responsibilities to ensure the proper layers of protection. One of the responsibilities of the operator is to be trained and familiarized with the equipment.

Isn't training and familiarization the same thing?

No they are different, see below table on next page.

What happens between training and familiarization and operation?

If the operators and users are ready to go, then there are two more steps prior to operation. First, an inspection of the worksite. The inspection checklist is contained in the operator's manual. The elements that must

Inside this issue:

be assessed are in the yellow box to the right:

If the worksite is safe and the operators are qualified, then the unit must be inspected. One of the first steps of unit inspection after getting the manual out is reviewing the inspection plate. The unit is required to be inspected by the ANSI standard and per manufacturer guidance every 12 months by a manufacturer authorized mechanic. This is to ensure that the unit operates correctly and to verify critical changes to configuration - such as installation of limit switches- have been made.

A note on testing controls and safety devices…..TEST THEM! A bump test of controls does not prove anything. Cycle the controls through all functions and ranges of movement of AWP at ground station to confirm unit operation. If a limit switch is supposed to stop boom extension at low angles, which is common, telescope out the boom in the horizontal position. If the unit telescopes out to a mechanical stop, the limit switch isn't working. You want to verify that the safety devices are functioning properly before you go up in basket. In all cases, follow the guidance in the operator's manual.

So the crew is trained, the worksite inspected and the unit is inspected. Now are we ready to work?

One more item: Personal Protective Equipment– that is your fall protection equipment. Remember, if you are wearing fall protection equipment, you must have completed Fall Protection Authorized Person training. If you have, you know how to inspect, don and adjust your harness. The harness will be connected to the AWP at a designated anchor point with an adjustable energy absorbing lanyard. The lanyard shall be connected to the Dorsal D of the harness. The lanyard shall always be connected to a certified anchor point in the basket. **Never connect to any structure outside the basket!**

Workplace Inspection

Drop Offs or holes including those concealed by water, ice, mud, etc.

Slopes

Bumps and deck obstructions

Debris

Overhead obstructions and electrical conductors

Hazardous locations and atmospheres

Inadequate surface and support to withstand all load forces imposed by aerial platform in all operating configurations

Wind and weather conditions

Presence of unauthorized persons

Other possible unsafe conditions

Pre Start Inspection

Inspection plate,- last inspection is within last 12 months

operating manuals and ANSI standard of responsibilities

Placards, warnings control markings

Operating and emergency controls

Safety devices and limit switches tested

Air hydraulic of fuel system leaks

Cables and wiring harnesses

Loose or missing parts

Tires and wheels

Outriggers, Stabilizers and other structures

Guardrail system

Items specified by manufacturer

	ANSI General Training	ANSI Familiarization
Location:	Classroom/formal + hands-on/practical	Prior to use (on the machine)
Length:	3-6 hours or more, depending on class size and number of equipment classifications to be covered	15-60 minutes or more
Facilitated by:	Qualified AWP equipment instructor	Qualified person (i.e., driver, salesperson, supervisor or trainer)
Material covered:	ANSI lists 11 required items related to the operation of the equipment, including decals and pre-start inspections. ■ Basically, the operator needs to be trained about the safe operation of the specific models present at training. ■ Under the direction of a qualified instructor, the operator needs to demonstrate proficiency in the actual operation of the equipment.	Covers the: ■ Location of manuals as specified by the manufacturer ■ Control functions: How to start the machine, move the machine, activate the deck extensions, steer and use outriggers, etc. ■ Safety devices, including location of the anchorage points and tilt alarms
Regulatory/ reference documents:	■ OSHA 1910, 1926.453 ■ ANSI/SIA A92.2, A92.3, A92.5, A92.6 Standards and Manuals of Responsibilities ■ Manufacturer's operating manual	■ ANSI/SIA A92.2, A92.3, A92.5, A92.6 Standards and Manuals of Responsibilities ■ Manufacturer's operating manual
Equipment:	Generally, trained on one or more types of equipment classifications: ■ Boom lifts ■ Push-around ■ Scissor lifts ■ Trailer-mounted boom lifts	Model-specific

Chart from www.ansi.org

Roderick Nerney is the Fall Protection Program Manager and Fall Protection Qualified Person for MSC. He is also Damage Control Leader (DCAL) at Training Center East and he sailed as Chief Engineer aboard USNS Zeus and Fleet Oilers. Shawn Smith is an AWP Train-the-Trainer and sailed as Chief Mate aboard LMSRs and TAGOS vessels.

Safety Snapshots

Aerial Work Platforms (AWP) can be dangerous.
What is wrong with these pictures?

Fig 1

Fig 2

Fig 3

Fig 4

Fig 1 - Boom is resting against anchor. We have all seen hanging anchors start to swing a little in a breeze. What do you suppose that would do to AWP? AWP also has basket wrapped in canvas providing more sail area.

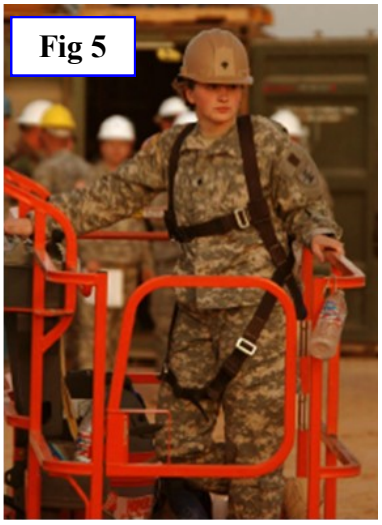
Fig 2 - Lanyards are connected to rail not anchor points.

Fig 3 - Plastic should be wrapped around rails not entire basket. Increasing sail area makes AWP much more susceptible to wind.

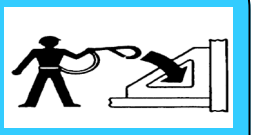
Fig 4 - None of these folks are in a harness; granted basket is over water but at some point in this evolution they will be back over land and required to be wearing harnesses.

Fig 5 - Look at those leg straps, this harness is not properly adjusted.

Fig 5



Personal Fall Arrest Systems (PFAS) must be used with AWPs



1. You must be trained as a Fall Protection Authorized Person (AP) to use a PFAS. AP training is available via Training Center East
2. Full body harness must be worn (NO Work belts) and connected at Dorsal D (not side D, Frontal D or shoulder Ds) with energy absorbing lanyard (not simple lanyard) to labeled anchor points (not around handrails or any structure outside of basket)

Safety First Three Quarters of FY10

The pie chart on the following page displays Class C incidents, first aid cases, and near misses for the first three quarters of FY 2010. Our MSC fleet has had one class A incident (private motor vehicle accident), one class B incident (man-lift incident), 81 class C incidents, 235 first aid cases, and reported 29 near misses during the first three quarters of FY 2010 . Near Miss reporting is improving! Keep up the good work. Near miss reporting is a preventive action. It assists the ship that reported the near miss in evaluating the conditions and actions which led to the near miss. This information is then shared with others to prevent reoccurrence and to heighten safety considerations. Class C incidents increased during the third quarter. The third quarter (April, May and June) typically has good weather for major outdoor projects. Many of these project involve risk and have resulted in more injuries.

Near Miss Incidents: 29

Slips/Trips/Falls-1 Fires - 12 Mat. Damage - 1 Collisions - 7 Spill –3

Equipment failure - 3 Inhale - 1 Contact - 1

First Aid Incidents: 235

Slips/Trips/Falls - 67	Debris in eye - 21	Exertion - 6	Equip Fail - 2
Lifting /Back Injury - 32	Cuts/Knife - 17	Chipping - 2	PMV - 4
Contact - 41	Pulling - 3	Repetition - 4	Other - 11
Pinch Points - 18	Burn - 6	Fire -1	

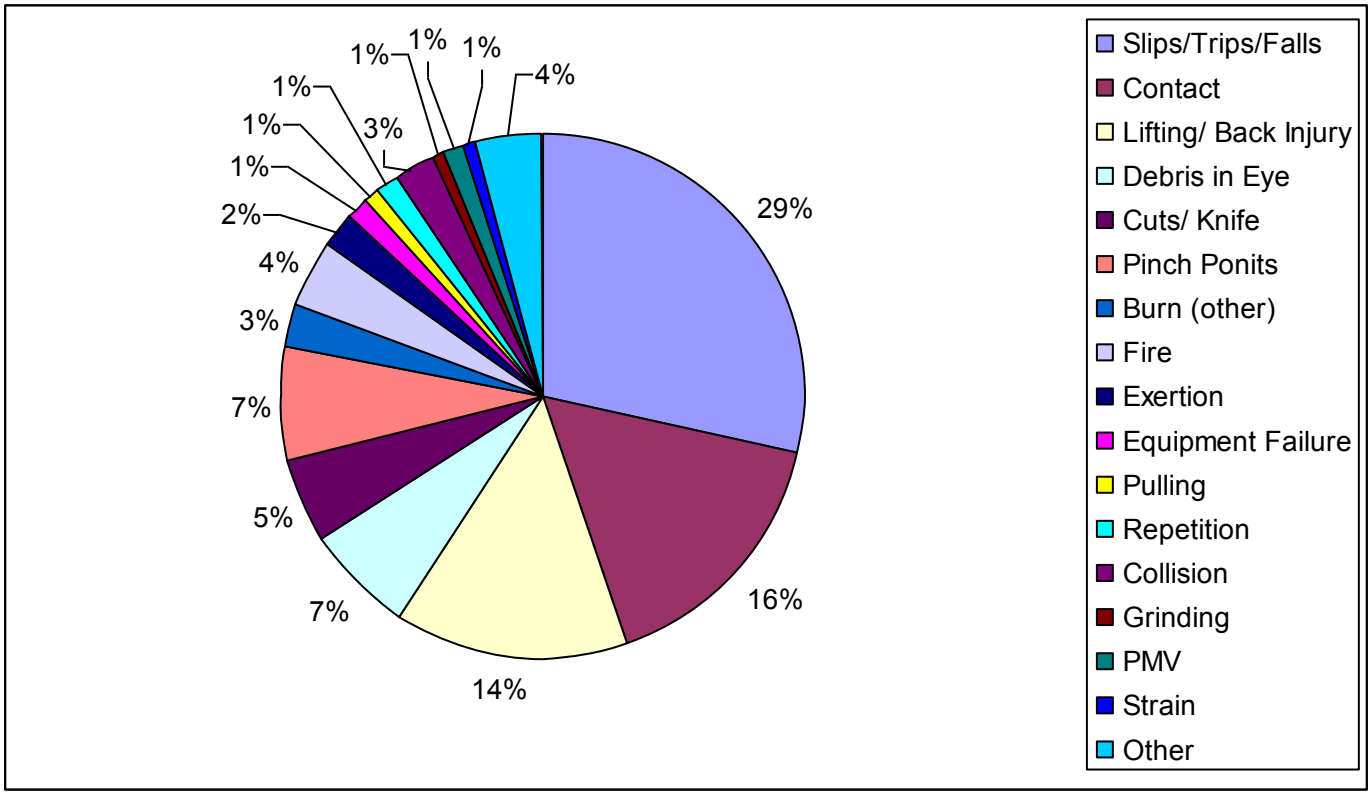
Class C Incidents : 81

Slips/Trips/Falls - 31	Chipping - 1	Burn - 3	Fire - 1
Lifting /Back Injury - 18	Collision - 2	PMV - 2	Pinch point - 6
Contact - 13	Electric - 1	Cut - 1	Debris - 2

Totals Incidents: 345

Slips/Trips/Falls - 99	Debris in eye - 23	Exertion - 6	Equip Fail - 5
Lifting /Back Injury - 50	Cuts/Knife - 18	Chipping - 3	PMV - 4
Contact - 55	Pulling - 3	Repetition - 4	Other - 20
Pinch Points - 24	Burn - 9	Fire - 13	
Collision– 9			

First Three Quarters of FY2010 Class C Mishaps, First Aid Cases, and Near Misses



The above pie chart shows the Class C, Near Miss and First Aid Cases for the first three quarters of FY2010. Slip/ Trips/ and Falls, Contact, and Lifting incidents continue to account for over half of MSC's incidents. Lost time injuries are slightly ahead of last year. The percentage breakdown of incidents into categories is similar to last year categories. Got an idea to help prevent injuries? Please send it to the safety mailbox (MSCHQ_Safety@navy.mil) and we will share it with the fleet.

Health and Safety

Facts About the Flu

What is Influenza (Also Called Flu)?

The flu is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to death. The best way to prevent the flu is by getting a flu **vaccine** each year.

Symptoms of Flu

People who have the flu often feel some or all of these symptoms:

- fever* or feeling feverish/chills
- cough
- sore throat
- runny or stuffy nose
- muscle or body aches
- headaches
- fatigue (very tired)

Some people may have vomiting and diarrhea, though this is more common in children than adults.

**It's important to note that not everyone with flu will have a fever.*

How Flu Spreads

Most experts believe that flu viruses spread mainly by droplets made when people with the flu cough, sneeze or talk. These droplets can land in the mouths or noses of people who are nearby. Less often, a person might also get flu by touching a surface or object that has flu virus on it and then touching their own mouth, eyes or nose.

How Serious is the Flu?

Flu is unpredictable and how severe it is can vary widely from one season to the next depending on many things, including:

- what flu viruses are spreading,
- how much flu vaccine is available
- when vaccine is available
- how many people get vaccinated, and when vaccine is available
- how many people get vaccinated, and
- how well the flu vaccine is matched to flu viruses that are causing illness.

One study found that during the 1990s, flu-related deaths ranged from an estimated 17,000 during the mildest season to 52,000 during the most severe season (36,000 average). Studies going back to 1976 have found that flu-related deaths ranged from a low of 4,700 to a high of 56,600 (average 25,500). During a regular flu season, about 90 percent of deaths occur in people 65 years and older.

Health and Safety

During 2009-2010, a new and very different flu virus (called 2009 H1N1) spread worldwide causing the first flu pandemic in more than 40 years. It is estimated that the 2009 H1N1 pandemic resulted in more than 12,000 flu-related deaths in the U.S. In contrast to seasonal flu, nearly 90 percent of the deaths occurred among people younger than 65 years of age.

Complications of Flu

Complications of flu can include bacterial pneumonia, ear infections, sinus infections, dehydration, and worsening of chronic medical conditions, such as congestive heart failure, asthma, or diabetes.

Preventing Seasonal Flu: Get Vaccinated

The single best way to prevent the flu is to get a flu vaccine each season. There are two types of flu vaccines:

- **The "flu shot"**–an inactivated vaccine (containing killed virus) that is given with a needle. The seasonal flu shot is approved for use in people 6 months of age and older, including healthy people, people with chronic medical conditions, and pregnant women.

- **The nasal–spray flu vaccine** –a vaccine made with live, weakened flu viruses that do not cause the flu (sometimes called LAIV for "Live Attenuated Influenza Vaccine"). LAIV is approved for use in healthy people 2-49 years of age who are not pregnant.

About two weeks after vaccination, antibodies develop that protect against influenza virus infection. Flu vaccines will not protect against flu-like illnesses caused by non-influenza viruses.

The seasonal flu vaccine protects against the three influenza viruses that research suggests will be most common. The 2010-2011 flu vaccine will protect against 2009 H1N1, and two other influenza viruses (an H3N2 virus and an influenza B virus).

When to Get Vaccinated Against Seasonal Flu

Yearly flu vaccination should begin in September, or as soon as vaccine is available, and continue throughout the flu season which can last as late as May. This is because the timing and duration of flu seasons vary. While flu season can begin early as October, most of the time seasonal flu activity peaks in January or later.

Who Should Get Vaccinated?

On February 24, 2010 vaccine experts voted that everyone 6 months and older should get a flu vaccine each year starting with the 2010-2011 influenza season. CDC's Advisory Committee on Immunization Practices (ACIP) voted for "universal" flu vaccination in the U.S. to expand protection against the flu to more people. While everyone should get a flu vaccine each flu season, it's especially important that certain people get vaccinated either because they are at high risk of having serious flu-related complications or because they live with or care for people at high risk for developing flu-related complications.

(From: http://www.niaid.nih.gov/topics/Flu/understandingFlu/Pages/keyFacts.aspx)

ENVIRONMENTAL

Hydrogen Sulfide is a Rotten Egg!

ISSUE: The subject of hydrogen sulfide associated with our Marine Sanitation Devices (MSD's) and fuel tanks has arisen. What is it and how can you avoid unnecessary harm and protect yourself against its inherent hazards?

What is it? Hydrogen sulfide (H_2S) is a dangerous and toxic compound. It has no color and is flammable. It can be identified in relatively low concentrations by a characteristic smell like that of ***rotten eggs***. Hydrogen sulfide can be found naturally in coal pits, sulfur springs, and gas wells. It can also be found as a byproduct of decaying sulfur-containing organic matter under low oxygen conditions. Because of this it is therefore commonly found in places such as sewers, waste treatment plants, manure stockpiles, mines, hot springs, and the holds of fishing ships. Other sources of hydrogen sulfide include petroleum and natural gas extraction and refining, pulp and paper manufacturing, rayon textile production, leather tanning, chemical manufacturing and waste disposal.

Its hazard and potential exposures- The primary route of exposure is inhalation and the gas is rapidly absorbed by the lungs. Absorption through the skin is minimal. People can smell the "rotten egg" odor of hydrogen sulfide at low concentrations in air. However, with continuous low-level exposure, or at high concentrations, a person loses his/her ability to smell the gas even though it is still present (olfactory fatigue). This can happen very rapidly and at high concentrations. The ability to smell the gas can be lost instantaneously. Therefore, **DO NOT** rely on your sense of smell to indicate the continuing presence of hydrogen sulfide or to warn of hazardous concentrations. In addition, hydrogen sulfide is a highly flammable gas and gas/air mixtures can be explosive.

Symptoms and health effects- Hydrogen sulfide is both an irritant and a chemical asphyxiate with effects on both oxygen utilization and the central nervous system. Its health effects can vary depending on the level and duration of exposure. Low concentrations irritate the eyes, nose, throat and respiratory system (e.g., burning/ tearing of eyes, cough, shortness of breath). Asthmatics may experience breathing difficulties. The effects can be delayed for several hours, or sometimes several days, when working in low-level concentrations. Repeated or prolonged exposures may cause eye inflammation, headache, fatigue, irritability, insomnia, digestive disturbances and weight loss. Moderate concentrations can cause more severe eye and respiratory irritation (including coughing, difficulty breathing, and accumulation of fluid in the lungs), headache, dizziness, nausea, vomiting, staggering and excitability. High concentrations can cause shock, convulsions, inability to breathe, extremely rapid unconsciousness, coma and death. Effects can occur within a few breaths, and possibly a single breath.

HOW TO PROTECT YOURSELF- Before entering areas where hydrogen sulfide may be present:

1. Air must be tested for the presence and concentration of hydrogen sulfide by a qualified person using air monitoring equipment, such as hydrogen sulfide detector tubes or a multi-gas meter that detects the gas. Testing should also determine if fire/ explosion precautions are necessary.
2. If the gas is present, the space/area must be ventilated continually to remove the gas.

3. If the gas cannot be removed, the person entering the space/area must use appropriate respiratory protection and any other necessary personal protective equipment, rescue and communication equipment. OSHA's Confined Spaces standard contains specific requirements for identifying, monitoring and entering confined spaces.

LOW	0 - 10 ppm	Irritation of the eyes, nose and throat
MOD	10 - 50 ppm	Headache Dizziness Nausea and vomiting Coughing and breathing difficulty
HIGH	50 - 200 ppm	Severe respiratory tract irritation Eye irritation / acute conjunctivitis Shock Convulsions Coma Death in severe cases

Entering dangerous H2S atmospheres with a level of H2S gas at or above 100 ppm is Immediately Dangerous to Life and Health (IDLH). Currently there is no Navy mandate to use continuous air monitoring for potentially dangerous spaces, however, when feasible and deemed cost effective, a continuous air monitoring system with an auto-alarm system can provide warning if a space contains dangerous levels of H2S. If utilized, they need to be maintained and operable. Follow all applicable Navy requirements when using the monitor, as well as manufacturer's guidance and recommendations.

In summary, per OPNAVINST 5100.19E, Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat, Section C1504. CONTROL OF TOXIC GAS HAZARDS IN SEWAGE MSD SYSTEMS: If hydrogen sulfide is detected by smell when working in the MSD pump room, MSD space, comminutor space, or any space containing sewage piping, evacuate the space immediately. If the space is equipped with a hydrogen sulfide alarm, evacuate the space immediately when the alarm sounds.

In spaces equipped with alarms and indicators, ensure all hydrogen sulfide alarms and ventilation low flow indicators are properly maintained and operable at all times. In spaces where the ventilation low flow indicator reads zero and/or the low flow alarm has sounded, ensure the atmosphere is tested prior to entry. The following two publications provide more details:

C15-3. NAVSEAINST 9593.1C, Certification Program for Marine Sanitation Devices (MSDs) Installed on Surface Ships, Craft and Boats in the U.S. Navy

C15-6. Naval Ships' Technical Manual (NSTM) 593, NAVSEA S9086-T8-STM-000/CW 593R, Pollution Control

If no monitoring system is in place, entry into potentially IDLH atmospheres can only be made using: 1) a full facepiece, pressure demand, self-contained breathing apparatus (SCBA) with a minimum service life of thirty minutes, or 2) a combination full facepiece, pressure demand, supplied-air respirator with an auxiliary self-contained air supply. If H2S levels are below 100 ppm, an air-purifying respirator may be used, assuming the filter cartridge/canister is appropriate for hydrogen sulfide. A full facepiece respirator will prevent eye irritation. If air concentrations are elevated, eye irritation may become a serious issue. If a half mask respirator is used, tight fitting goggles must also be used. **NEVER attempt a rescue in an area that may contain hydrogen sulfide without using appropriate respiratory protection and without being trained to perform such a rescue.** The rescuer can very easily get caught in a bad situation by venturing into a confined space without adequate protection. Remember that at levels above 200 ppm, collapse, coma and death due to respiratory failure can occur within seconds after only a few inhalations so you can be overcome yourself quickly. Such incidents are sadly all too common and only serve to make the rescue effort twice as difficult.

From: OSHA fact sheets

Namesake Section

T-AOT 1122 USNS PAUL BUCK is named after Captain Paul Buck due to his heroic actions in the South Atlantic Ocean in 1942 during the Second World War. Buck was captain of the S.S. Stephen Hopkins, an American Liberty Ship that, on its maiden voyage, sunk the fully manned German warship Stier to the bottom of the Atlantic. With only a civilian crew of 40 and 15 teenage U.S. Navy gunners, Captain Buck led the Stephen Hopkins to save countless American lives and stop the Stier from completing its mission. Tragically, Captain Buck did not survive the encounter. In 1944, he was posthumously awarded the Merchant Marine Distinguished Service Medal, an award that only 141 have ever received.

T-AO-194 USNS JOHN ERICSSON is named after John Ericsson, the American Swedish-born inventor and mechanical engineer. Ericsson played a significant role in the development of the two screw propeller design on naval ships and the creation of the first torpedoes. He single handedly invented the hot air engine, which was an integral part of his development of the first ironclad warship, the USS Merrimack.

T-AKR-314 USNS CHARLTON - During the Korean War, Sgt. Cornelius H. Charlton, a member of Company C, platoon was attacking a heavily defended hostile position on commanding ground when the leader was wounded and evacuated. Sgt. Charlton assumed command, rallied the men, and spearheaded the assault against the hill. Personally eliminating 2 hostile positions and killing 6 of the enemy with his rifle fire and grenades, he continued up the slope until the unit suffered heavy casualties and became pinned down. Regrouping the men he led them forward only to be again hurled back by a shower of grenades. Despite a severe chest wound, Sgt. Charlton refused medical attention and led a third daring charge which carried to the crest of the ridge. Observing that the remaining emplacement which had retarded the advance was situated on the reverse slope, he charged it alone, was again hit by a grenade but raked the position with a devastating fire which eliminated it and routed the defenders. The wounds received during his daring exploits resulted in his death, but his indomitable courage, superb leadership, and gallant self-sacrifice reflect the highest credit upon himself, the infantry, and the military service.

Recent Incidents

CIVMAR was working in a man-lift and tied his lanyard outside of the man-lift basket to an object which wrapped the lanyard causing the CIVMAR to be lifted out of the basket.

Causal Factors – improper anchoring of a lanyard

Lessons Learned – CIVMAR should have secured his lanyard to the man-lift on a designated anchor point.

Two CIVMARs were working in a man-lift which was located on the pier but hanging over the water. The man-lift tipped over sending both CIVMARs into the water.

Causal Factors – Improper operation of man-lift equipment

Lessons Learned – Proper operation of rental equipment is gained from training and reading the manual.

While in shipyard, CIVMAR discovered a telephone junction box with exposed wires left open and unattended. No one was injured.

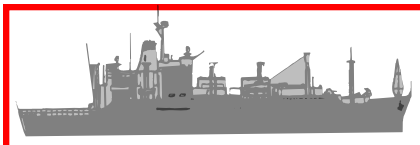
Causal Factors – Shipyard worker had left junction box exposed.

Lessons Learned – Shipyard workers may not operate to the same level of safety as MSC. Report all jobs where shipyard workers are not operating at an accepted level of safety.

While inspecting an engineroom cable a CIVMAR stepped on a valve to get a better look. The valve moved causing the CIVMAR to fall into the bilge area.

Causal Factors – Stepping on an object which could potentially move

Lessons Learned – Work should only be performed when standing on a stable base or with fall protection.



While moving ammo using an MHE, the driver backed over a CIVMAR's foot.

Causal Factors – MHE rolled over CIVMAR's foot

Lessons Learned – MHE drivers should not back up until they are sure the area is clear. Also, CIVMARs working in the vicinity of MHEs should not walk behind MHEs being operated.

CIVMAR was carrying luggage down a wet ladderwell. CIVMAR was wearing sneakers and slipped, resulting in a fall.

Causal Factors – slippery ladderwell

Lessons Learned – CIVMAR did not take into account the weather conditions. Extra caution should have been taken by having non-skid footwear and getting help carrying the luggage. Ships should maintain sufficient non-skid on gangways.

Readiness Through Safety !

This Date in History

MSC Safety Manager
Kevin Kohlmann
MSCHQ_Safety@navy.mil
202-685-5722

MSC Environmental Manager
Jim Fernan
james.b.fernan@navy.mil
202-685-5764

Fred Woody
Luke Wisniewski
Dr. John Austin
Bob Scofield
Robert Kenney
Jim Hayes
Mike Brown
Jonathan Berman
Lyndsay Beaulieu
John Cofrancesco

MSFSC Safety-ISM@navy.mil
757-443-2722

DP Francis Pelosi

Deputy DP Mark Stoegbauer

Frank Ridge
Jim Mahon
Daphanie Brown
Perry Corbett
Chet Barnett
Mark Cook
Ed Terpening

Christopher Columbus (31 October 1451 – 20 May 1506) was a navigator, colonizer, and explorer from Genoa, Italy, whose voyages across the Atlantic Ocean led to general European awareness of the American continents in the Western Hemisphere. Columbus completed four voyages of exploration all funded by Isabella I of Castile. The anniversary of Columbus's 1492 landing in the Americas is usually observed as Columbus Day on 12 October in Spain and throughout the Americas, except Canada. In the United States it is observed annually on the second Monday in October.

20 December 1987 - The **MV DORIA PAZ** was a Philippine-registered passenger ferry that sank after colliding with the MT Vector . With a death toll of at most 4,375 people, the collision resulted in the deadliest ferry disaster in history and is widely cited as the worst ever peace-time maritime disaster. Upon the collision, the Vector's cargo ignited and caused a fire that spread onto the DONIA PAZ. Survivors recounted that the flames spread rapidly throughout the ship, and that the sea itself was on fire.

26 November 1898 - **SS PORTLAND** (United States) left India Wharf in Boston, Massachusetts for Portland, Maine on a regularly scheduled run. She never made it to port. None of the 192 passengers and crew survived the massive storm that wreaked havoc on New England's coast — a storm that was later dubbed "The Portland Gale" after the tragic loss of the ship.

08 December 1966 - **SS HERAKLION** (Greece) was en route from the port of Souda to Piraeus in Athens, when the car ferry capsized and sank in the Aegean Sea. The sinking resulted in the deaths of over 200 people with 47 being saved. It was later determined that an unsecured vehicle had broken through the loading door which allowed seawater to enter the ship .

07 November 1941 - **ARMENIA** - was a Soviet hospital ship that was sunk by German torpedo-carrying planes. The ship was evacuating refugees, wounded military and staff from several of the Crimea's hospitals. An estimated 7,000 people died in the sinking, 2,000 of whom are believed to have been unregistered passengers aboard. There were only eight survivors who were picked up by an escort vessel.